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## **Paper 19: Extension implementation of ILCA interventions: Dry-season cow supplementation and fodder banks**

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### **Abstract**

ILCA scientists have tested the rationing of agro-industrial byproducts and legumes grown in fodder banks as interventions amongst Fulani pastoralists in the two case study areas of Kurmin Biri and Abet over the past 5 years, using the three stages of on-farm experimentation in livestock systems research (LSR); namely:

- Researcher-managed and -implemented trials
- Researcher-managed and farmer-implemented trials
- Farmer-managed and -implemented trials.

The next phase in the cycle is the multi-locational testing of these interventions so that their adaptability and acceptability to producers can be established under different ecological and socio-cultural conditions. This phase is best accomplished in cooperation with extension and development agencies, which are essential to LSR as vehicles for testing the proposed interventions and procedures. Without close links with national extension services LSR at this stage cannot be effective.

Two of ILCA's innovations are currently being extended by the National Livestock Project Unit (NLPU): dry-season cow supplementation, under the government scheme of that name, and fodder banks. A fixed loan was extended by the NLPU for the purchase of inputs for each of the two packages.

These extension efforts gave ILCA's team members the opportunity to stand back and observe whether the innovation they had designed would survive without them. The team needed to know whether the extension services would be able to implement the interventions; how closely extension and producers would adhere to the original design; what modifications they would introduce; how successful the intervention would be in terms of the goals it was designed to achieve; how persistent it would be and what side-effects it might have.

The problems that emerged during implementation were identified as the unreliable supply and high cost of inputs, an inadequate and inexperienced extension system and a regulatory credit system. Extension and producer deviations during implementation from the ILCA recommendations were recorded. The move from researcher- to farmer managed and -implemented experiments led to unclear animal productivity results. The need for more

emphasis on fodder bank research was clearly demonstrated. The rate of adoption could not be predicted due to the small sample size and inadvertent researcher effect, emphasizing the need for more replicates in different ecological and socio-economic situations.

## Introduction

ILCA faces not just the technical problem of improving livestock nutrition but also that of converting the technical research results into innovations that will be accepted by livestock producers and which can be implemented by the national extension systems. The many instances of results from research agencies that have not been adopted by local producers indicate the need for ILCA to continually assess the appropriateness of its interventions. Extension services must be equipped with the necessary resources, so that a willing producer can obtain the inputs needed to implement the innovation.

Two of ILCA's innovations are currently being extended by the National Livestock Project Unit (NLPU). They are the rationing of agro-industrial byproducts to cows, under the government's Dry-season Cow Supplementation Scheme, and, on a limited scale, fodder banks. To various degrees, NLPU had been involved in the trials since 1980.

Structured and unstructured interviews with pastoralists and extension staff testing the ILCA interventions were conducted. Observations of actual behaviour - recording deviations from ILCA recommendations and finding out why they occurred - were also made. Input and extension requirements to implement the interventions were analysed.

## Dry-season cow supplementation

In 1984, the NLPU became solely responsible for the implementation of the Dry-Season Cow Supplementation Scheme. The scheme was supervised by the staff of the Kachia Grazing Reserve under the direction of the Range Management Officer. One Grazing Control Assistant was detailed to extension and supervision for each of the three sites in Kurmin Biri, Abet and Zonkwa. They were expected to provide technical assistance and supervision at frequent intervals.

A fixed loan of up to N 250 (US\$ 335) with a 6-month repayment period was offered for the purchase of inputs such as cottonseed cake, wheat bran, molasses, drugs, mineral salt licks, feeding troughs and fencing materials to erect a feeding enclosure. The scheme's main input was the provision of cottonseed cake - enough to feed an enterprise of 5 cows-for 100 days over the dry season. Participants were to select and feed these animals with the objective of increasing milk yields.

### Participant behaviour

Fourteen Fulani registered in the scheme, only 23% of the projected enrollment. The principal reasons for lack of interest were the costs of cottonseed cake (the 1984 price was double that of 1983, rising from 8.75 Naira to 15.00 Naira for a 50-kg bag) and the terms of the loan. In previous years, Fulani had been able to purchase cottonseed cake when they needed it and feed it to the animals that they wished. The new loan requirements were seen as rigid and unacceptable. Of the 14 pastoralists registered in the scheme, 5 initially followed the feeding recommendation of selective rationing; 2 of the 5 left the scheme in mid-season because they felt that they were incurring too much debt without enough gain; the other 3 had by March increased the numbers of cattle being fed or even included their whole herds. The remaining 9 pastoralists did not follow the feeding recommendation exactly, but practised some form of rationing. However, the number of animals involved ranged from 6 to 20. They were mostly lactating cows in poor condition. In 5 cases, they constituted the part of the herd which was left at the ruga when other animals were transferred elsewhere for the dry season. One

pastoralist instituted his own experiment and fed 4 lactating cows, 5 heifers, 4 calves, and 2 bulls to see the effect of feeding cottonseed cake to each. In only one case was there no consistency at all in the pattern of feeding.

Half the Fulani had additional feedstuffs to those purchased under the scheme. This may have been a reason for the increased numbers of animals fed. Maintenance feeding and, in some cases, survival feeding were the general aims of participants - as they were also among the fodder bank participants (Paper 18). Those Fulani who were willing and able to register in the scheme in 1984 did so in order to gain access to a cottonseed cake supply which, by and large, they fed to all lactating cows in poor condition with insufficient milk for their calves.

### Extension implementation

For a variety of reasons, the scheme was not actually implemented as planned. Ear-tagging to identify the selected animals was delayed or not done at all; the veterinary component of the loan was not extended; extension support was minimal; there was virtually no supervision of pastoralist compliance with the scheme; pastoralists were meant to transport their own supplies but, in the event, NLPU did it for them.

1. Planning. The divergence between plans and implementation as experienced in 1984 was, to some extent, brought about by the 'push' to get the scheme under way in January, with too little time allowed for efficient organization. Plans were formulated and the terms of the loan drawn up in a matter of a few weeks before and during the scheme's start-up. Some of the supplies needed were not available at the Service Centre at Kurmin Biri. No time was allowed for the orientation of minimally trained extension staff. Motorcycles intended for the Grazing Control Assistants were in disrepair. Delay and confusion reigned from the outset, and certain components of the scheme were never implemented.

2. Supplies. As it turned out, it was lucky that only 14 Fulani registered for the scheme, because higher numbers could not have been serviced with the existing supply of cottonseed cake at Kurmin Biri. Given the high cost and limited availability of cottonseed cake in 1984, NLPU would have had great difficulty procuring an additional supply; various negotiations to acquire more cottonseed cake never came to fruition and, due to the costs, NLPU recognized that dry-season supplementation could not be continued with a cottonseed cake ration.

As was expected, extension supervision was clearly more adequate in Kurmin Biri than in Abet or Zonkwa, principally due to proximity to resources and on-site staff. The Grazing Control Assistant responsible for the scheme in Kurmin Biri managed to visit various rugas sporadically. In Zonkwa and Abet, however, visits were very irregular and taken up with distributing the feedstuffs rather than with extension or supervision. The lack of transport made it difficult for the extension staff to establish a programme of work, even if they intended to do so.

3. Communications. As with any new programme, there were likely to be delays in start-up. But delays were aggravated by a change-over in supervisory staff at Kurmin Biri. Consequently there were misunderstandings, both between the different NLPU staff levels and between NLPU and the Fulani. These occurred in the early stages and were cleared up over time.

None of the Kurmin Biri field staff who were to supervise the scheme had any previous exposure to it before the programme start-up. Thus they were learning about the scheme at the same time as implementing it. In discussion several weeks later, these Grazing Control Assistants showed confusion over the terms of the loan and specific implementation questions. Not surprisingly, interviews with the Fulani also revealed confusion and misinterpretations of the loan. Most of this confusion was cleared up as the programme

progressed, and by March the assistants appeared to have an adequate grasp of the scheme. However, none of the assistants are Fulani. There is a certain margin for misinterpretation when instructions are originally given and printed in English, verbally translated into Hausa and finally transmitted to Fulfulde speakers with four ranks of the extension service in between. The assistants were also in the difficult position of requesting Fulani to repay past loans at the same time as trying to persuade them of the benefits of cottonseed cake feeding.

4. Incentives. If the Grazing Control Assistants were to supervise and monitor selective rationing, they had to visit Fulani herds at the time of feeding, i.e. 6.30 - 7.00 hours and/or 17.30 - 18.00 hours. The established working day for all government employees is 7.30 - 15.30. No payment was made for overtime, so there was apparently little incentive to visit rugas at the time of feeding. The assistants were also embarrassed by changing policies, their own lack of understanding of the scheme's objectives and their role as debt collectors.

The cost of cottonseed cake and the loan requirements appeared to be the central factors affecting uptake of the supplementation scheme, although implementation was confounded by numerous inadequacies in the extension effort. It appears that unless a cheaper feed supply is identified - a task NLPU is trying to tackle - only the more wealthy producers are likely to register for the loan and procure the feedstuffs, a tendency which will only intensify existing inequalities.

NLPU is a loan agency and any dry-season supplementation scheme would be included under a loan. If a comparable scheme is to continue, the terms of the loan need to be more flexible (i.e., in terms of quantity of supplement to be disbursed, the animals to be fed, the feeding period in the dry season), based on beneficiaries' objectives and their perceptions of the expected return. Likewise, it needs to be planned well in advance, detailing the operational steps and budgetary needs to execute implementation .

## Fodder banks

It was principally due to the rising cost of agro-industrial byproducts that ILCA formulated the fodder bank package. Cottonseed cake feeding was intended to acquaint pastoralists with the principles of rationing as a lead into the fodder bank scheme. Experience has shown that rationing is practised, to the extent of not allowing indiscriminate use of all available feedstuffs. It seems possible that Fulani would be willing to follow the recommended feeding scheme if other feedstuffs were available to feed other animals considered in need. Some pastoralists will be unwilling or unable to invest in fodder banks, but could utilize purchased feedstuffs if they were available on a flexible basis. Even pastoralists with fodder banks, whilst acknowledging that a fodder bank makes feed purchases less necessary, have expressed a desire to be able to purchase additional dry-season supplements. Six Fulani with fodder banks registered in the cow supplementation scheme in order to be able to purchase cottonseed cake.

By the end of 1983, the number of established fodder banks had risen to 20 in the three areas of Kurmin Biri, Kachia and Abet. This number will rise to 46 at the end of 1984 in Kaduna and four other states in Nigeria (Table 1). In contrast to Abet and Kurmin Biri, Kachia represents a site of spontaneous uptake since 1982. Those in other states are a result of NLPU's efforts to extend the package throughout subhumid Nigeria.

**Table 1. Fodder banks establishment at various sites in subhumid Nigeria.**

| Location    | Year               |                    |                    |                    |      | Total |
|-------------|--------------------|--------------------|--------------------|--------------------|------|-------|
|             | 1980 <sup>a/</sup> | 1981 <sup>a/</sup> | 1982 <sup>b/</sup> | 1983 <sup>c/</sup> | 1984 |       |
| Kurmin Biri | 1                  | 1                  | 6                  | 4                  | 2    | 14    |
| Abet        | 1                  | 1                  | 2                  | -                  | -    | 4     |

|                        |   |   |    |   |    |    |
|------------------------|---|---|----|---|----|----|
| Kachia <sup>d/</sup>   | - | - | 2  | 2 | 3  | 7  |
| Kaduna <sup>e/</sup>   | - | - | 3  | - | 2  | 5  |
| Ganawuri <sup>f/</sup> | - | - | -  | - | 5  | -  |
| Plateau <sup>g/</sup>  | - | - | -  | - | 3  | 3  |
| Niger <sup>g/</sup>    | - | - | -  | - | 3  | 3  |
| Benue <sup>g/</sup>    | - | - | -  | - | 4  | 4  |
| Gongola <sup>g/</sup>  | - | - | -  | - | 1  | 1  |
| Total                  | 2 | 2 | 13 | 6 | 23 | 46 |

a/ Fully funded and managed by ILCA.

b/ Funded and managed by ILCA/pastoralists.

c/ Fully funded and managed by pastoralists. Spontaneous uptake.

e/ Semi-commercial farms.

f/ New ILCA case study areas.

g/ Extended by NLPU.

Over the 5-year life span of the fodder bank research, responsibility for investment costs has gradually been transferred. At the outset ILCA incurred all the establishment costs (except land), but now the pastoralists are to incur all costs (Paper 21). Credit is extended by the NLPU to pay for the fencing materials, seeds and fertilizer. Management inputs by the participating pastoralists include fencing, land clearing, trampling by cattle to prepare the seedbed, seeding, early grazing to control weeds, firebreak establishment, maintenance and rationing to selected animals during the dry season. Establishment costs are detailed in Table 2.

**Table 2. Fodder bank initial investment costs (4 ha).**

| Item                                    | Cost (Naira) <sup>a/</sup> |
|---|----------------------------|
| Fencing 800 m @ 3 ₦/m                   | 2400                       |
| Seed 4 ha @ 7 kg/ha @ 12 ₦/kg           | 336                        |
| Fertilizer 4 ha @ 150 kg/ha @ 0.10 ₦/kg | 60                         |
| Labour 30 worker-day @ 4 ₦/worker-day   | 120                        |
| Total                                   | 2916                       |

a/ One ₦ = US\$ 1.123.

In 1983, NLPU took over the establishment of fodder banks in the IT CA case study areas. A total of six new fodder banks were started. Pastoralists were to obtain the necessary inputs through the credit package from the Livestock Service Centre at Kurmin Biri and erect their own fodder banks. Management advice would come from the NLPU personnel at Kurmin Biri, with, close liaison and supervision by the ILCA research team. As might be expected, given the testing stage of the technology and the lack of experience of NLPU field staff with the fodder bank, numerous deviations occurred from what ILCA had intended: administrative delays meant that fodder bank promotion was late in start-up; heavy earth-moving equipment was used to clear fodder banks; extension advice and supervision was inadequate; extension staff did management tasks rather than encourage active participation by the Fulani.

As a result of these difficulties, an ILCA/NLPU workshop was held in December 1983 to better prepare extension staff. It was attended by NLPU staff from eight states. The purpose of the workshop was to provide general guidelines for the extension of fodder banks in other states

during 1984. Subsequently the NLPU has extended fodder banks in four other states of Nigeria during 1984-85. This extension provides the necessary multi-locational testing of the fodder bank intervention. ILCA is monitoring extension implementation and pastoralist behaviour in these new sites.

## Conclusions

For a research institute such as ILCA, it is at this implementation stage of research that the real problems and potentials of a new technology come to light. While the NLPU is not an extension agency per se, the problems experienced in implementing the cow supplementation scheme and the fodder bank technologies are not new nor atypical of lessons documented elsewhere in the developing world:

- Lack of policy commitment and budgetary provisions for long- term development.
- Limiting or irregular supply of essential inputs.
- Hierarchical organization and structural rigidities.
- Ad hoc planning with inadequate implementation procedures.
- Inexperienced and untrained field staff.
- Ineffective field-level supervision and support.
- Lack of incentives and personal motivation.
- Credit arrangements with too many regulations.

ILCA was aware of many of the problems of extension in Nigeria and thought it possible to minimize their effects by seeking interventions that the producers could largely implement themselves. The predicted rise in the cost of feed concentrates has occurred sooner and more severely than anticipated. The supplementary feeding of concentrates for increased productivity is for the time being no longer a viable proposition. This places even greater urgency on ILCA's fodder bank research.

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